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NOTICE OF ALLOWANCE AND FEE(S) DUE

7590 10/01/2004

Albert J. Marcellino, Esquire
WOODCOCK WAHBURN LLP
46th Floor
One Liberty Place
Philadelphia, PA 19103

EXAMINER

HEWITT, JAMES M

ART UNIT

PAPER NUMBER

3679

DATE MAILED: 10/01/2004

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/062,118	01/31/2002	Daniel E. Burgess	APST-0060	9989

TITLE OF INVENTION: FLEXIBLE COUPLING

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$685	\$0	\$685	01/03/2005

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail**

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Commissioner for Patents
P.O. Box 1450
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(703) 746-4000**

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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

7590 10/01/2004

Albert J. Marcellino, Esquire
WOODCOCK WAHBURN LLP
46th Floor
One Liberty Place
Philadelphia, PA 19103

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (703) 746-4000, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

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nonprovisional	YES	\$685	\$0	\$685	01/03/2005

EXAMINER	ART UNIT	CLASS-SUBCLASS
HEWITT, JAMES M	3679	464-020000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
 (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
 (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are enclosed:

- ☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s):

- ☐ A check in the amount of the fee(s) is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above. NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 153 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 153 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (703) 305-1383. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.



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Notice of Fee Increase on October 1, 2004

If a reply to a "Notice of Allowance and Fee(s) Due" is filed in the Office on or after October 1, 2004, then the amount due will be higher than that set forth in the "Notice of Allowance and Fee(s) Due" because some fees will increase effective October 1, 2004. See Revision of Patent Fees for Fiscal Year 2005; Final Rule, 69 Fed. Reg. 52604, 52606 (May 10, 2004).

The current fee schedule is accessible from WEB site (<http://www.uspto.gov/main/howtofees.htm>).

If the fee paid is the amount shown on the "Notice of Allowance and Fee(s) Due" but not the correct amount in view of the fee increase, a "Notice of Pay Balance of Issue Fee" will be mailed to applicant. In order to avoid processing delays associated with mailing of a "Notice of Pay Balance of Issue Fee," if the response to the Notice of Allowance is to be filed on or after October 1, 2004 (or mailed with a certificate of mailing on or after October 1, 2004), the issue fee paid should be the fee that is required at the time the fee is paid. See Manual of Patent Examining Procedure (MPEP), Section 1306 (Eighth Edition, Rev. 2, May 2004). If the issue fee was previously paid, and the response to the "Notice of Allowance and Fee(s) Due" includes a request to apply a previously-paid issue fee to the issue fee now due, then the difference between the issue fee amount at the time the response is filed and the previously-paid issue fee should be paid. See MPEP Section 1308.01.

Effective October 1, 2004, 37 CFR 1.18 is amended by revising paragraphs (a) through (c) to read as set forth below.

Section 1.18 Patent post allowance (including issue) fees.

- (a) Issue fee for issuing each original or reissue patent, except a design or plant patent:
- By a small entity (Sec. 1.27(a))..... \$685.00
 - By other than a small entity..... \$1,370.00
- (b) Issue fee for issuing a design patent:
- By a small entity (Sec. 1.27(a))..... \$245.00
 - By other than a small entity..... \$490.00
- (c) Issue fee for issuing a plant patent:
- By a small entity (Sec. 1.27(a))..... \$330.00
 - By other than a small entity..... \$660.00

Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.

Notice of Allowability

Application No.

10/062,118

Examiner

James M Hewitt

Applicant(s)

BURGESS, DANIEL E.

Art Unit

3679

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed 4/9/04.
2. ☒ The allowed claim(s) is/are 1-20, 35, 22-27 and 30-34 renumbered as 1-32 respectively.
3. ☒ The drawings filed on 31 January 2002 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

/s/ M L
7/6/04

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Andrew Hagerty on 7/1/04.

The application has been amended as follows:

The claims have been rewritten as follows:

1. (Previously presented) A flexible coupling for use in a rotatable device, the flexible coupling comprising:

 a female member comprising an internal surface including a female thread formed thereon;

 a male member comprising an external surface including a male thread formed thereon, at least a portion of the male member is disposed within the female member such that the female thread and the male thread are intermeshed but generally spaced apart from each other; and

 a layer of elastically deformable material disposed in the space between the female and male threads;

 wherein at least one of the female thread and the male thread is tapered in two opposing directions with respect to a coupling centerline.

2. (Original) The flexible coupling according to claim 1, wherein the male and female threads each have a major diameter and a minor diameter, and wherein at least one of

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the female thread minor diameter and the male thread major diameter is tapered in two opposing directions with respect to the coupling centerline.

3. (Original) The flexible coupling according to claim 2, wherein both the female thread minor diameter and the male thread major diameter are tapered in two opposing directions with respect to the coupling centerline.

4. (Original) The flexible coupling according to claim 1, wherein the elastically deformable material is an elastomer.

5. (Original) The flexible coupling according to claim 1, wherein the rotatable device comprises a drill pipe section.

6. (Original) The flexible coupling according to claim 5, wherein the flexible coupling is located inside the drill pipe section and forms at least part of an electronics suspension system.

7. (Original) The flexible coupling according to claim 5, wherein the flexible coupling is adapted for interconnecting a plurality of drill pipe sections.

8. (Original) The flexible coupling according to claim 1, wherein the intermeshed female and male threads have a first end region and an opposing second end region, and at least one of the female thread and the male thread is double-tapered, comprising:

a first taper extending from a position proximate the first end region and toward the second end region, the first taper being defined by a first taper angle with respect to the coupling centerline; and

a second taper extending from a position proximate the second end region and toward the first end region, the second taper being defined by a second taper angle with respect to the coupling centerline.

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9. (Original) The flexible coupling according to claim 8, wherein both the female thread and the male thread are double-tapered.

10. (Original) The flexible coupling according to claim 8, wherein the first taper and the second taper are inwardly directed with respect to the coupling centerline, from positions proximate the first and second end regions respectively.

11. (Original) The flexible coupling according to claim 8, wherein the first taper and the second taper are outwardly directed with respect to the coupling centerline, from positions proximate the first and second end regions respectively.

12. (Original) The flexible coupling according to claim 8, wherein the first and second taper angles are from about 1 degree to about 45 degrees.

13. (Previously presented) The flexible coupling according to claim 8, wherein the first and second taper angles are from about 5 degrees to about 10 degrees.

14. (Original) The flexible coupling according to claim 8, wherein the first taper angle and the second taper angle are equally dimensioned.

15. (Original) The flexible coupling according to claim 8, wherein the male and female threads each have a major diameter and a minor diameter, and wherein at least one of the female thread minor diameter and the male thread major diameter is double-tapered.

16. (Original) The flexible coupling according to claim 15, wherein both the female thread minor diameter and the male thread major diameter are double-tapered.

17. (Original) The flexible coupling according to claim 15, wherein both the female thread major diameter and the male thread minor diameter are constant.

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18. (Original) The flexible coupling according to claim 15, wherein one portion of the female thread major diameter is constant and another portion of the female thread major diameter is tapered.

19. (Original) A flexible coupling for interconnecting sections of drill pipe, the flexible coupling comprising:

- a female member comprising an internal surface including a female thread formed thereon;

- a male member comprising an external surface including a male thread formed thereon, at least a portion of the male member is disposed within the female member such that the female thread and the male thread are intermeshed but generally spaced apart from each other; and

- a layer of elastically deformable material disposed in the space between the female and male threads;

- wherein at least one of the female thread and the male thread is tapered in two opposing directions with respect to a coupling centerline.

20. (Original) A flexible coupling for suspending a component within a drill pipe section, the flexible coupling comprising:

- a female member comprising an internal surface including a female thread formed thereon;

- a male member comprising an external surface including a male thread formed thereon, at least a portion of the male member is disposed within the female member such that the female thread and the male thread are intermeshed but generally spaced apart from each other; and

- a layer of elastically deformable material disposed in the space between the female and male threads;

- wherein at least one of the female thread and the male thread is tapered in two opposing directions with respect to a coupling centerline.

21. (Canceled).

22. (Currently amended) The flexible coupling according to claim ~~[[21]]~~ 35, wherein overlapping portions of the female and male members define opposing first and second end regions, and wherein the space is a different size at locations proximal the first and second end region than at locations distal the first and second end regions.

23. (Original) The flexible coupling according to claim 22, wherein the space is larger at locations proximal the first and second end regions than at locations distal the first and second end regions.

24. (Original) The flexible coupling according to claim 22, wherein the space is smaller at locations proximal the first and second end regions than a locations distal the first and second end regions.

25. (Currently amended) The flexible coupling according to claim ~~[[21]]~~ 35, wherein the male member comprises a threaded region including a male thread formed on an external surface thereof, the male thread having a major diameter and a minor diameter, and wherein the male member outer diameter is defined by the male thread major diameter.

26. (Original) The flexible coupling according to claim 25, wherein the male thread major diameter is double-tapered.

27. (Previously presented) The flexible coupling according to claim 25, wherein the female member comprises a threaded region including a female thread formed on an internal surface thereof, the female thread having a major diameter and a minor diameter, and wherein the female member inner diameter is defined by the female thread major diameter.

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28. (Canceled).

29. (Canceled).

30. (Previously presented) A flexible coupling comprising:

a female member comprising a closed end, an opposing open end, and an inner diameter;

a male member comprising an outer diameter, at least a portion of the male member being disposed within the female member such that there is a space between the male member outer diameter and the female member inner diameter; and

a layer of elastically deformable material disposed within at least a portion of the space;

wherein the space, in the absence of the layer of elastically deformable material, at a position proximate the open end is greater than the space at a position proximate the closed end.

31. (Original) The flexible coupling according to claim 30, wherein the female member comprises a female thread formed on an inner surface thereof and the male member comprises a male thread formed on an external surface thereof, and wherein the female thread and the male thread are tapered in opposing directions.

32. (Currently amended) ~~The flexible coupling according to claim 21,~~ A flexible coupling for coupling a drill pipe section to a complementary device, the flexible coupling comprising:

a female member comprising an inner diameter, and opposing first and second ends;

a male member comprising an outer diameter, at least a portion of the male member being disposed within the female member such that there is a space between the male member outer diameter and the female member inner diameter; and

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a layer of elastically deformable material disposed within at least a portion of the space;

wherein the male member outer diameter changes size at least twice along the portion of the male member disposed within the female member and

wherein a decrease in diameter of the male member outer diameter is followed by an increase in diameter along the portion of the male member disposed within the female member.

33. (Currently amended) ~~The flexible coupling according to claim 21,~~ A flexible coupling for coupling a drill pipe section to a complementary device, the flexible coupling comprising:

a female member comprising an inner diameter, and opposing first and second ends;

a male member comprising an outer diameter, at least a portion of the male member being disposed within the female member such that there is a space between the male member outer diameter and the female member inner diameter; and

a layer of elastically deformable material disposed within at least a portion of the space;

wherein the male member outer diameter changes size at least twice along the portion of the male member disposed within the female member and

wherein an increase in diameter of the male member outer diameter is followed by a decrease in diameter along the portion of the male member disposed within the female member.

34. (Previously presented) A flexible coupling for coupling a drill pipe section to a complementary device, the flexible coupling comprising:

a female member comprising an inner diameter, and opposing first and second ends;

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a male member comprising an outer diameter, at least a portion of the male member being disposed within the female member such that there is a space between the male member outer diameter and the female member inner diameter; and

a layer of elastically deformable material disposed within at least a portion of the space;

wherein the male member outer diameter changes size at least twice along the portion of the male member disposed within the female member, and wherein the complementary device is an adjacent drill pipe section.

35. (Previously presented) A flexible coupling for coupling a drill pipe section to a complementary device, the flexible coupling comprising:

a female member comprising an inner diameter, and opposing first and second ends;

a male member comprising an outer diameter, at least a portion of the male member being disposed within the female member such that there is a space between the male member outer diameter and the female member inner diameter; and

a layer of elastically deformable material disposed within at least a portion of the space;

wherein the male member outer diameter changes size at least twice along the portion of the male member disposed within the female member, and wherein the complementary device is an electronic device.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M Hewitt whose telephone number is 703-305-0552. The examiner can normally be reached on M-F, 930am-600pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel Stodola can be reached on 703-308-2686. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



James M. Hewitt
Patent Examiner
Technology Center 3600